RELATIONSHIP BETWEEN TRADE DEFICIT AND ECONOMIC GROWTH: EMPIRICAL ANALYSIS OF MYANMAR

By

AUNG, Wint Thu

THESIS

Submitted to

KDI School of Public Policy and Management

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Committee in charge:

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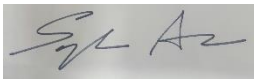

Professor Chrysostomos TABAKIS

Approval as of December, 2017

ABSTRACT

Myanmar has suffered continuous long-term trade deficits. However, there have still been no definite conclusions regarding the relationship between trade deficits and economic growth. This paper therefore aims to examine whether trade deficits have a positive or negative effect on Myanmar's economic growth through an empirical analysis of the years 1989 to 2015. This paper utilizes the Johansen co-integration test and the Vector Error Correction Model to respectively analyze the long-run and short-run relationship between trade deficits and economic growth in the case of Myanmar. The results show that in the long-run, there is a significant negative relationship between trade deficits and economic growth. However, in the short-run, there is an insignificant negative relationship between trade deficits and economic growth.

Keywords: Trade deficits, economic growth, empirical analysis, significant, insignificant, VECM, Johansen-Cointegration

I dedicate this paper to my mother.

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Most importantly, I would like to pay respect to my mother and family members who have always taken care of me. In addition, I am grateful to the Government of the Republic of the Union of Myanmar, Union Minister and Deputy Ministers for Planning and Finance, Director General and Deputy Director Generals for the Planning Department, Director General for PAPRD, Deputy Director General for CSO, and Director for Economic Analysis and Research Sector. I am thankful to the KOICA-MDI scholarship program. Without the support and encouragement of these individuals and organizations, it would have been impossible for me to study for my Master of Public Policy degree in Korea.

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ABBREVIATIONS

FDI	-	Foreign Direct Investment
ODA	-	Official Development Assistance
GDP	-	Gross Domestic Product
GDI	-	Gross Domestic Investment
BOP	-	Balance of Payment
BSITC	-	By Standard International Trade Classification
UNCTAD	-	The United Nations Conference on Trade and Development
OLS	-	Ordinary Least Square
CSO	-	Central Statistical Office
VIF	-	Variance Inflation Factor
ADF	-	Augmented Dickey-Fuller
VECM	-	Vector Error-Correction Model
VAR	-	Vector Auto Regression

CHAPTER 1

INTRODUCTION

1.1 A Brief Historical Overview of Myanmar Economy

Before 1948, Myanmar was the largest rice exporter in Asia (Fujita et al., 2009). In the wake of gaining independence from the U.K. in 1948, Myanmar's economy was intensely reliant upon international trade, with exports constituting about 45% of its GDP in the early 1950s (Tin Maung Maung Than, 2007). From 1962 to 1988, the military government practiced an inward-looking, self-reliant policy, which called for a socialist economic system (Mya Than, 1988). Meanwhile, the government nationalized all the enterprises, including foreign trade. Within this period, international trade progressed toward becoming marginalized, even though it was the key source of gaining foreign goods and services without foreign direct investment (FDI) and constrained official development assistance (ODA). The Myanmar economy declined slowly as a result.

After 1985/86, the value of exports decreased, while the price of imports became higher; hence, imports of raw materials and spare parts declined, leading to a contraction of domestic production. Mya Than (1988; 1999) identified that Myanmar’s ability to import is dependent on the degree of its exports. Therefore, the gross domestic product (GDP) declined by 15.8 percent during the period from 1986/87 to 1988/89, while per capita GDP also declined by 20 percent during the same period.

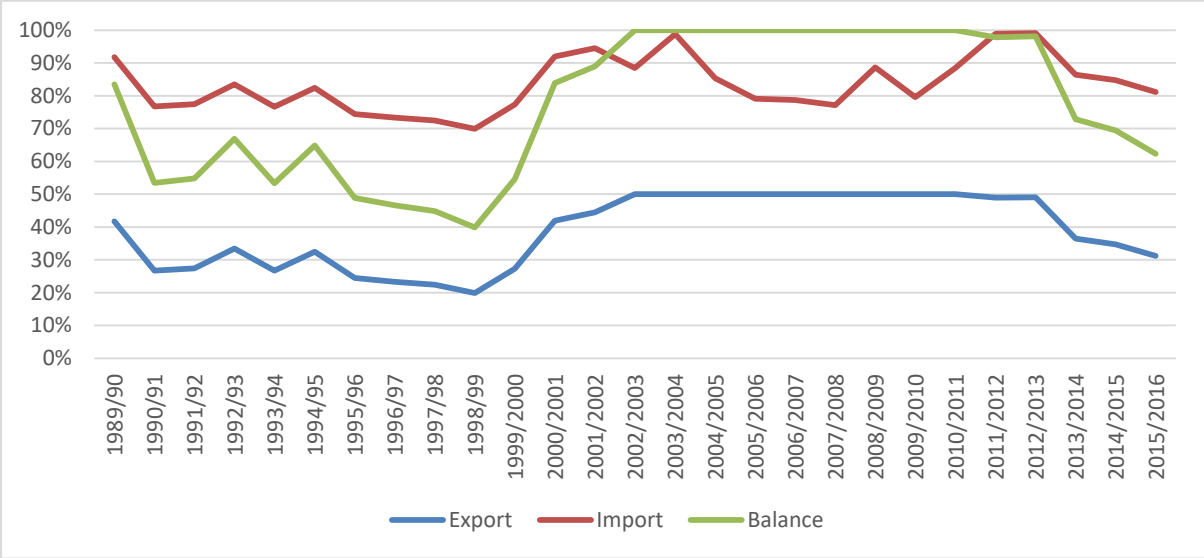
In late 1988, the government transformed the economic policy from inward- to outward-looking, hoping to revitalize the economy by promoting international trade. At first, Myanmar started with economic reform by lifting the 20-year restriction on the procurement and domestic trade of rice. In November 1988, the government made various efforts for opening the economic and political fronts to boost foreign investment and private

sector involvement in local and international trade. This reform revitalized foreign trade as a main player of economic growth for Myanmar.

1.2 Statement of Problem

According to Myanmar government data, Myanmar had a trade surplus starting from the pre-war and post-war periods up to 1959/1960. Since then, Myanmar has suffered continuous long-term trade deficits, except for the years 1961/62 to 1963/64, 1965/66, 1973/74, 1976/77, and 2002/03 to 2010/11. Figure (1) shows the trade balance of Myanmar starting from 1989 to 2015.

Figure 1. *The Trade Balance of Myanmar (1989-2015)*



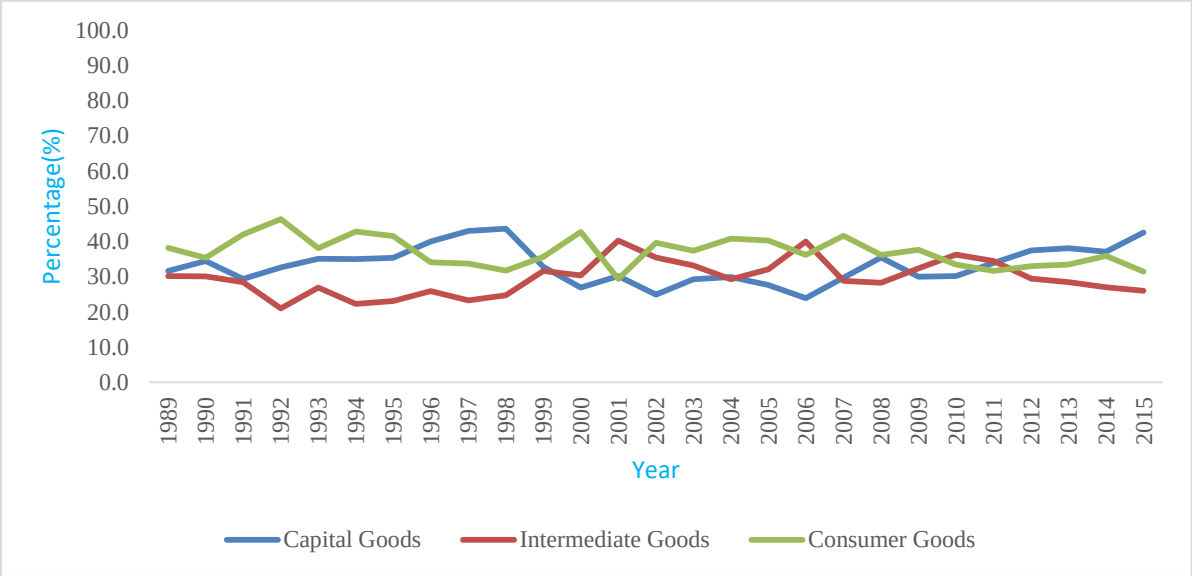
Source: Author's calculation based on the data from the Myanmar Central Statistical Office

According to the BSITC code, Myanmar has a negative balance of trade in the animal and vegetable oils and fats, chemicals, and manufactured goods (chiefly by materials). It has absolute positive advantage in food and inedible crude materials (except fuel). Table.1 shows the balance of international trade in Myanmar. Meanwhile, Myanmar still has a low manufacturing product share to total exports as shown in Table.2.

As a least developed country, Myanmar's exports heavily depend on primary commodities that account for about 80% of total exports (Mya Than, 1992). On the other

hand, Myanmar imports not only consumer goods that are required for domestic consumption but also capital goods and intermediate goods that are needed for domestic production. According to Myanmar's government data, Myanmar imported consumer goods in the first place, capital goods at the second place, and intermediate goods as the third place. The figure below shows the structure of imports starting from 1989 to 2015.

Figure.1 *The Structure of Imports (1989-2015)*



Source: Myanmar Central Statistical Office, the Ministry of Planning and Finance

1.3 Scholarly Review on Myanmar's Economy

Fujita et al. (2009) noted that Myanmar had significant economic growth and capital accumulation, motivated by increasing trade and capital inflows in the 15 years after 1988. Mya Than (1988 & 1992) claimed that reducing the prices of primary exports and raising the prices of imports created a serious weakening in terms of trade. The Myanmar government brought down the level of imports, by giving priority to the significance of capital goods, new materials, and spare components because of the dearth of foreign exchange.

The decline in Myanmar's export earnings scaled down the bulk of imports (U Aye Ko, 1987 as cited in Mya Than, 1992). Because of such measures, the supply of raw materials and machinery parts needed for domestic production had to be reduced, leading to a decline in domestic output. The drop in domestic production gave rise, not only to insufficient domestic consumption, but also to a decline in exports. Accordingly, the economic growth rate fell.

U Myint (2009) pointed out that from 2000 to 2005, Myanmar had high real economic growth, even though there were low GDI to GDP ratios. Also, the increased growth rate of the industry sector was misleading because at that time, Myanmar had low power consumption, insufficient crude oil products, and a decline in the importation of capital goods for industries. Khin Maung Kyi et al. (2000) proposed that due to the 25-year isolation and inactivity, Myanmar required a great quantity of foreign capital for industrial and infrastructure growth. Myat Thein (2004) noted that Myanmar's decline in exports led to the constraints on balance of payment (BOP) and the government budget, in addition to low investment, slow industrial development, and low economic growth, which ultimately led to even lower exports and increased raw material imports.

1.4 The Purpose of this Study

This paper aims to examine whether trade deficits have a positive or negative effect on Myanmar's economic growth through an empirical analysis of the years 1989-2015. This study will fill the gap in this specific research area because no prior research has been done to completely identify the association between trade deficits and economic growth in Myanmar. It is my hope that the results of this study will be helpful to Myanmar's policy-makers and decision makers who are involved in the trade and macroeconomic activities, by highlighting that they should take into account the long-run effects of trade deficits on economic growth when analyzing the national development plan.

1.5 Research Questions

For several decades, government officials, decision-makers, policymakers, and economists have presented a variety of reasons to explain the fluctuating trend in Myanmar's economic growth. These reasons include: an increase in trade deficits, highly unstable earnings on primary exports, low level of physical and human capital, political instability, a growing fiscal deficit, a high inflation rate, a cumulative foreign debt, and, a weakening law and order situation in the country, among others. This paper attempts to respond to the following research questions regarding short-term and long-term prospects in Myanmar based on the uncertainties and contradictions of previous theoretical and empirical studies:

(1) What kind of relationship is there between trade deficits and economic growth?

(2) Is foreign direct investment (FDI) beneficial for Myanmar's economic growth?

(3) Does investment positively contribute to economic growth?

(4) Can fiscal deficits be harmful for Myanmar's economy?

(5) Does human capital support higher economic growth?

(6) What is the association between the manufacturing sector and economic growth?

1.6 Hypothesis

The following hypotheses were constructed relevant to the long-term relationship with economic growth:

(1) There is a negative connection between trade deficits and economic growth.

(2) FDI is beneficial for economic growth in Myanmar.

(3) Investment positively contributes to economic growth.

(4) Fiscal deficits are harmful to Myanmar's economy.

(5) Human capital supports higher economic growth.

(6) There is a positive association between the manufacturing sector and economic growth.

1.7 The Structure of Thesis

This paper is organized into five chapters. The first chapter is the introduction, and comprises a brief historical overview and scholarly review on Myanmar's economy. The second chapter is a review of literature, which includes relevant literature, theories and empirical findings related to studies on Myanmar's foreign trade. Chapter 3 discusses data collection and methodology, explaining the econometric model and what method will be used in this paper. Chapter 4 presents results and discussions. This chapter will explain the results for long run and short run by using Johansen Co-integration and VECM models. Finally, Chapter 5 includes summary of findings, policy analysis, implications and recommendations, and also discusses why trade deficits exist and how they can impact Myanmar's economy.

CHAPTER 2

LITERATURE REVIEW

2.1 International trade and economic growth

In terms of theories, there are diverse prospects interrelated with foreign trade and economic growth for the short-run and the long-run. Many previous studies have found that a positive relationship exists between trade and economic growth. Smith (1776) suggested that a nation should specialize in the production of and export products for which it holds "absolute advantage". Ricardo (1817) noted that if a country specializes in products it produces relatively more efficiently than other products (comparative advantage), there are still global gains to be realized. According to these concepts, foreign trade can positively impact on economic growth through specialization trading.

As suggested by the Harrod-Domar model, if labor remains constant and trade affects only efficiency in the utilization of resources, the growth rate can still be expected to improve in view of the enduring decrease in the marginal capital–output ratio. According to Robert Solow (1956), trade does not always have an effect on economic growth, and in particular, trade does not influence steady-state growth. In addition, benefits from trade depend on the production, environment, and the characteristics of the goods that a country produces and trades (Marrewijk, 2012).

As explained by Magnusson (2002), mercantilism theory states that a country should always have a trade surplus by maximizing exports through subsidies, and minimizing imports through tariffs and quotas restricting international trade. Following this concept, a country can gain from international trade by implementing protectionist policies, which encourage exports and discourage imports, thus creating its own favorable trade balance. Accordingly, the country which practices protectionist policies will not have trade deficit in the economy.

According to Michel P. Todaro (2011), being dependent on primary exports has a degree of risk and uncertainty because the long-run prices of those goods are downward and very unstable. However, many developing countries rely on primary exports for importing raw materials, equipment, capital goods, intermediate producer goods, and consumer products that are required for their industrial expansion and rising consumption. As an outcome, the developing countries face trade deficits that negatively impact on the current and capital accounts that contribute to a slowdown in economic growth.

At present, there is still no definite relationship between trade deficits and economic growth. Trade deficits could be beneficial and may be a sign of a growing economy (Alessandria, 2007). A trade deficit is not always harmful, as there is no guarantee that a trade surplus will result in robust economic health (OpenStax College, 2014). In fact, the U.S. economy did better when the trade deficit was growing that when it was going down (Griswold, 2011). In the long-run, trade deficits can potentially pull down the GDP and the employment rate (Griswold, 2007; CBO, 2000). In addition, a huge trade deficit can jeopardize a country's economic development since the current account deficit goes to the international assets' net marketing, as noted by Baloch (2009). Likewise, a trade deficit can slow down the country's economic growth according to Liu and Vollmers (2005).

Whether trade deficits are good or bad for economic growth, has been examined in previous studies. However, the results are not still unclear. According to the previous studies, for some countries, trade deficit is bad for long run, while it is good for short run. Alternatively, for some countries, trade deficit is good for long run, while it is bad for short run. Table.3 shows the results of previous empirical studies.

Table.3 *Previous Empirical Studies*

Researcher	Country & Periods	Objective	Methodology	Findings
Najid Ahmad et al. (2013)	Pakistan 1971 ~ 2007 (37) year	To study the connection between trade deficits and economic growth	➢ ADF test ➢ Johansen Co-integration ➢ VECM	➢ Negative insignificantly relationship for the long run ➢ Positive significantly relationship for the short run
Moushumi Dhar (2016)	Bangladesh 1980 ~ 2013 (34) year	To inspect the association with trade deficits and economic growth	➢ ADF test ➢ Johansen Co-integration ➢ VECM	➢ Positive insignificantly relationship for the long run ➢ Granger Causality test show there has no the statistically relationship.
Shoukat Ali et al (2015)	Pakistan 1990 ~ 2014 (25) years	To study the effect of FDI and trade balance on the economic growth	➢ ADF test ➢ Johansen Co-integration ➢ VECM	➢ Trade balance has a negative significantly impact on GDP for the long run ➢ Not significant for the short run
David M.Gould & Roy J. Ruffin	Cross Country Analysis 1960~1989 (30) years	To examine the relationship between trade deficits and economic growth	Quantitative Method	➢ No relationship in the long-run
Peng Sun and Almas Heshmati (2010)	China 2002 ~ 2007 (6) years	To evaluate the impacts of foreign trade on economic growth	Qualitative and Quantitative Approaches	➢ Growing global trade encourages fast economic growth
FuatSekmen (2011)	Turkey	To study the relationship between current account and the economic growth	ARDL Method	➢ No relationship for the long run ➢ Positive relationship for the short run

Researcher	Country & Periods	Objective	Methodology	Findings
Mohammad A. Ashraf & Hasanur R. Joarder (2009)	Bangladesh 1983 ~ 2008 (26) years	To study the changing pattern of the volume and volatility of the trade deficit of Bangladesh economy	ANOVA Test	➢ Trade deficit is still substantially higher and volatile to get a good economic environment ➢ Generally, trade deficit is marked as a bad sign of the economy
Marcio Holland (2004)	Ten Latin American countries	To analyze the relationship between trade balance and the economic growth	VAR	➢ Positive relationship for the long run
Kyaw Kyaw Lynn (2015)	Myanmar 1990 ~ 2014	To examine the relationship between international trade and economic growth	➢ ADF ➢ VAR	➢ Not significant effect on economic growth
Dipendra Sinha And Tapen Sinha	Asian Countries	To find the relationship between trade openness, domestic investment, and economic growth	Phillips-Perron (1988) test	➢ Trade openness is a significantly positive relationship on economic growth in Myanmar, Pakistan, Iran, Iraq, Israel, Singapore, China, and Hong Kong.
Ram, Rati (1990)	A Cross-Country Study	To see the relationship between import and real GDP growth of real GDP	Augmented Production Function Approach	➢ Importation on energy and capital goods can help economic growth for an LDC.

2.2 Investment and Economic Growth

Essentially, many researchers and policymakers believe that the economic performance of a country is related closely with investment. Investment is interconnected with the process of economic growth as agreed by neo-classical and Marxist economists (Anwer & Sampath, 1999). Moreover, Artelaris, Arvanitidis & Petrakos (2006) stressed that one of the most important variables correlated with growth is investment; this has been illustrated in both neoclassical and endogenous growth models. According to Hakim (2009), investment is essential for replacing depreciated and exhausted production capacity, so that the operation of generating income continues, and for introducing new capacity, which utilizes technological efficiency to enhance the production operation, resulting in economic growth. Regarding investment and economic growth, numerous studies show that there is a positive relationship between investment and economic growth. However, Elboiashi et al. (2009) determined that the rate of GDP growth could not be attributed by the rise of investment.

2.3 FDI and Economic Growth

Sahraoui Mohammed Abbes et al. (2015) stated that FDI is an engine for economic growth by reducing the gap between national economy and capital requirements, raising ability levels, improving market access, and contributing to technology transfers for all countries. According to the hypothesis of FDI-led growth, FDI can generate a higher economic growth rate in host countries by increasing capital, creating new business prospects, and enabling the handover of technology (Borensztein et al., 1998; De Gregorio, 2003; de Mello, 1997).

Li and Liu (2005) found that FDI can indirectly impact human capital and directly impact economic growth. De Mello (1999) pointed out that FDI can positively impact economic growth for both developing and developed economies. On the other hand, Herzer

et al. (2008) established results which showed that there is an unclear relationship between FDI and per capita income for developing countries. Palpate Kotrajaras (2010) found that there is an obvious relationship between FDI and economic growth in high and middle-income countries but not for low income countries.

In the case of Myanmar, Tin Aye Han (2002) noted that the increase in the economic growth rate in the country attributable to FDI had shown positive results, but the total quantity of foreign direct investment had not significantly increased. Among Southeast Asian nations, Phyoe (2015) found that FDI revitalized the economic development process in Myanmar, Thailand, and Singapore, but not in countries like Indonesia and Malaysia. Furthermore, the results showed that trade openness negatively impacts Myanmar's economy.

2.4 Human Capital and Economic Growth

There are many studies that focused on the role of human capital for long term economic growth. Human capital is a creative contribution, and an engine of growth (Lucas, 1988 as cited in Gould & Ruffin, 2017). Romer (1986) wrote that technological change is a consequence of accumulation of knowledge acquired by forward-looking and profit-maximizing firms' production. Lack of human capital is a dangerous impediment to economic development in Myanmar that is threatening to trap the economy in a low value-added model, based on cheap unskilled labor and natural resource exploitation, while obstructing national poverty reduction and inclusive growth goals (D'Amico et al., 2015). According to the Asian Development Bank (2014) report entitled "Myanmar: Unlocking the Potential Country Diagnostic Study," for Myanmar to attain sustainable economic growth and acquire the full benefits from its ambitious reform, the quality of human capital and infrastructure need to be enhanced.

Ruffin et al. (2017) found that open economies experience growth rates higher than closed economies when literacy rates are relatively high. Barro and Sala-i-Martin (1995) found that average schooling years have significant positive impact on economic output. Musibau and Rasak (2005) also found that in the long run, human capital and economic growth have a significant positive relationship through technology parameter. Zhang and Zhuang (2011) showed that there is a more significant effect of tertiary education on economic growth than primary and secondary education in Chin. However, Jajri and Ismail (2012) found that in Malaysia, human capital does not affect growth in the long run, but has a significant influence on growth in the short run. Meanwhile, Benhabib and Spiegel (1994) found that human capital is insignificant on per capita growth rates, but positively affect the growth rate of total factor productivity.

2.5 Budget Deficits and Economic Growth

Myanmar has had long-term budget deficits since 1962. In this context, some economists and decision makers worry about its effects for long run economic growth. Barrow (1979) discovered that there is a significant positive impact of the budget deficit on economic growth. In analyzing the case of developing Asian countries from 1990 to 2006, Huynh (2007) reasoned that the budget deficit negatively impacts the growth rate of GDP. Fatima et al. (2012) also found that budget deficits negatively affect the economic growth. if the government revenue cannot cover the expenditures in the long run. Additionally, Al-Khedar (1996) found that although the budget deficit negatively impacts trade balance, there was a significant positive influence on the overall economic growth.

2.6 Manufacturing Sector and Economic Growth

Adugna (2014), utilizing Kaldor's laws, wrote that the manufacturing sector is an engine for economic growth among developed and developing nations. The manufacturing sector extremely influences economic development for a country. The higher the

manufacturing output in the economy, the faster the increase in national output, while at the same time leading to an increase in productivity of the factors of production. Adugna's (2014) interpretation of Kaldor's laws for the the ways that the manufacturing sector affects the economy are as follows:

> The first Kaldor law states that the manufacturing sector is the engine of economic growth. That means the higher the manufacturing output in the economy, the higher the increase the national economy. The second law is that the higher manufacturing output increases the higher the labor productivity which increases the national economy. The third law is that the shift of labor from aother sector to manufacturing sector increase the productivity of another sector which positively affects the national economy (p. 6-7).

In the same manner, higher innovation and creativity in the manufacturing sector increases economic growth. Thus, the growth rate of GDP is strongly connected with the growth rate of manufacturing output (Pacheco-López & Thirlwall, 2013). In addition, there is a positive relationship between Gross Domestic Product (GDP) and the output growth of manufacturing (Pons-Novell & Viladecans-Marsal, 1998).

CHAPTER 3

DATA COLLECTION AND METHODOLOGY

3.1 Data Collection

This chapter will explore the association between trade deficits and economic growth, as well as examine the role of investment, foreign direct investment, secondary school enrollment rates, budget deficit, and manufacturing sector during the periods from 1989 to 2015. For this study, the trade deficit share in GDP proxy is considered as the independent/ explanatory variable, and the growth rate of real GDP per capita is the dependent variable. Control variables were used to identify the impact of trade deficits on economic growth, since economic growth may react to different variables other than just trade deficit. To make the model more realistic and to avoid omitting variables, six (6) control variables were incorporated: investment share in GDP, FDI share in GDP, gross secondary school enrollment rate as an indicator of human capital, fiscal deficit share in GDP, and manufacturing share in GDP.

This paper uses secondary data. The time series data from the years 1989 to 2015 were collected from the UNCTAD database, World Development Indicators, the Barro and Lee database, and the Central Statistical Organization of Myanmar to complement each other. The data in this study were recoded annually, such as a gross domestic product (GDP), growth of real GDP per capita, export and import data, trade balance data, and foreign direct investment (FDI), investment, a gross secondary school enrollment rate, budget deficit and manufacturing sector.

3.2 Methodology

Based on previous research, this paper uses the major method of analysis called the Ordinary Least Squares Method (OLS). Since time series variables were to be utilized, it is important to break down the properties of the variables. Accordingly, this study uses an

Augmented Dickey Fuller test to check whether the data are stationary or not. In addition, the Johansen co-integration test and the Vector Error Correction Model were used to respectively examine the long-run and short run relationship between trade deficits and economic growth in Myanmar's case. Finally, diagnostic tests were applied to check whether the data fit autocorrelation, as well as to deal with normality and heteroscedasticity problems. Finally, the Granger Causality test was used to check the causality between variables.

3.3 Econometric Model

To analyze the relationship between trade deficits and economic growth for Myanmar, the following model was established based on previous similar studies referenced in this study:

$$\Delta \ln GDPPC_t = \alpha 0 + \beta 1(TD_{t-1}) + \beta 2(INV_{t-1}) + \beta 3(FDI_{t-1}) + \beta 4(HC_{t-1}) + \beta 5(BD_{t-1}) + \beta 6(MANU_{t-1}) + \varepsilon$$

Where:

$\Delta \ln GDPPC_t$ = Real Growth of GDP Per Capita at year t-1

$\beta 1(TD_{t-1})$ = the trade deficits share in GDP at year t-1

$\beta 2(INV_{t-1})$ = the investment share in GDP at year t-1

$\beta 3(FDI_{t-1})$ = the foreign direct investment share in GDP at year t-1

$\beta 4(HC_{t-1})$ = the human capital at year t-1

$\beta 5(BD_{t-1})$ = the budget deficits share in GDP at year t-1

$\beta 6(MANU_{t-1})$ = the manufacturing sector share in GDP at year t-1

ε = the error terms

CHAPTER 4

EMPIRICAL RESULTS

4.1 Estimating Relationships

Before analyzing the long run and short run tests, the estimation was done by using two-way graphs to see the relationships between the dependent variable and independent variables as shown in the Appendix, Figures 3, 4, 5, 6, 7 and 8. According to the results, Figures 3, 5, 6 and 8 show that there is a positive relationship between trade deficits, FDI, secondary school enrollment rate, manufacturing sector, and economic growth; while there is a negative relationship between investment, budget deficit, and economic growth as shown in Figure 4 and 7.

4.2 Multicollinearity test

Before the main Stata analysis model, the variance inflation factor (VIF) test was performed to test the level of multicollinearity. As a rule of thumb, the level of multicollinearity should be less than 10 percent. The VIF was tested as a first stage of the model. The resulting level of Mean VIF was less than 10 percent as seen below in Table.4. Thus, the variables were shown not to have multicollinearity with each other.

Table.4 *The results of variance inflation factor (VIF) test*

Variable	VIF	1/VIF
MANU	18.21	0.054924
INV	13.35	0.074892
HC	6.56	0.152406
BD	4.23	0.236446
TD	2.96	0.337287
FDI	1.24	0.807009
Mean VIF	**7.76**	

4.3 Dickey Fuller Test for unit roots

The Dickey-Fuller test is done to determine whether the variables are stationary or non-stationary. Hypotheses were first needed to construct the Dickey-Fuller test. Here, the null hypothesis is that the variables are unit roots, meaning they are non-stationary. The non-stationarity characteristic of the variables is related with trends or breaks in a persistent, long-term movement over time. Stationary means that there is no change in mean, variance and autocorrelation construction overtime. Time series data should be stationary for analyzing. As a rule, if the variables are not stationary in the initial level, the first difference can test.

An augmented Dickey Fuller test is used to check the stationarity of the data, as time series data usually show trends through time. Except for FDI share in GDP, all the variables were not stationary at the level test so the first difference is made to be fixed. As a result, the variables—real growth of per capita GDP, FDI, investment, trade deficits, budget deficits, and human capital—are stationary at the 1% level of significance, while manufacturing sector is stationary at the 5% level of significance after the first difference. The results of the Augmented Dickey Fuller tests are shown in Table.5.

Table.5 *The results of Augmented Dickey Fuller Test*

Dickey Fuller Test	GDPPC	TD	INV	FDI	HC	BD	MANU
Level test	-2.309 (0.169)	-1.595 (0.486)	1.183 (0.996)	-4.707 (0.000)***	0.290 (0.977)	-1.547 (0.510)	1.268 (0.996)
First Difference	-6.745 (0.000)***	-5.928 (0.000)***	-3.507 (0.008)***	-7.077 (0.000)***	-9.478 (0.000)***	-5.131 (0.000)***	-2.935 (0.041)**

4.4 Vector Error Correction Model (VCEM)

4.4.1 Johansen Tests for Co-integration. To decide the model (whether VECM or VAR) for this study, it is required to check the co-integration among the variables. The Johansen test is applied for this purpose. According to the results in Table.6, there are three co-integrations moving together in the long run, thus the vector error correction model was recommended to be used in this study.

Table.6 *The results of Johansen test*

Johansen tests for cointegration

Trend: constant — Number of obs = 25
Sample: 1991 - 2015 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	56	-469.22591	.	184.7462	124.24
1	69	-436.5708	0.92664	119.4359	94.15
2	80	-413.8461	0.83765	73.9866	68.52
3	89	-395.99398	0.76025	38.2823*	47.21
4	96	-386.44033	0.53434	19.1750	29.68
5	101	-380.69487	0.36849	7.6841	15.41
6	104	-377.07126	0.25165	0.4369	3.76
7	105	-376.85283	0.01732		

4.4.2 Optimal Lag Selection. According to this result, Ordinary Least Squares (OLS) method can be used in this study. However, Johansen Co-integration method was applied because the results of OLS were spurious. For this purpose, the optimal number of lags in the VECM model was used because lag is related with the number of past-values of the variables contained in the model to predict the future model. The optimal lag used in the Likelihood ratio test is 2; this can be seen in Table.7.

Table.7 *Optimal Lag Selection*

Selection-order criteria
Sample: 1993 - 2015 Number of obs = 23

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-519.31				1.8e+11	45.7661	45.853	46.1117
1	-383.286	272.05	49	0.000	1.1e+08	38.1987	38.8941	40.9634
2	-287.41	191.75*	49	0.000	9.2e+06	34.1226	35.4263	39.3064
3	.	.	49	.	-1.3e-88*	.	.	.
4	4625.99	.	49	.	.	-388.26*	-386.261*	-380.312*

Endogenous: GDPPC TD INV FDI HC BD MANU
Exogenous: _cons

4.4.3 Vector Error-Correction Model. By using the optimal number of lag 2, the vector error correction model is used as a statistic tool to analyze the relationship between the dependent variable and the independent variables for the long run and short run.

4.4.3.1 Johansen Co-integration Test.

Table.8 *Johansen Co-integration Normalized Equation Results (For Long Term)*

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	6	161.3229	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
GDPPC	1	.	.	.	.	.
TD	-.1646972	.0208696	-7.89	0.000	-.205601	-.1237935
INV	-.3753812	.1124117	-3.34	0.001	-.595704	-.1550584
FDI	-.0638848	.0456903	-1.40	0.162	-.1534361	.0256665
HC	-.2237196	.0382191	-5.85	0.000	-.2986276	-.1488116
BD	.0052422	.0014342	3.66	0.000	.0024312	.0080532
MANU	1.099593	.1858271	5.92	0.000	.735379	1.463808
_cons	-.7862135	.	.	.	.	.

The results, depicted in Table.9, showed that there was a negative relationship between trade deficits, investment, foreign direct investment, secondary school enrollment

rate, and economic growth in the long run. All have significant relationships, except foreign direct investment. There is a significantly positive relationship between budget deficits, manufacturing and economic growth in the long run.

4.4.3.2 Vector Error-Correction Model.

Table.9 *Vector Error-Correction Model Results (For Short Term)*

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_GDPPC						
_ce1						
L1.	-.5899313	.2750526	-2.14	0.032	-1.129025	-.0508381
GDPPC						
LD.	-.3111494	.2448543	-1.27	0.204	-.791055	.1687562
TD						
LD.	-.0259972	.0812335	-0.32	0.749	-.185212	.1332176
INV						
LD.	-.7073175	.2546117	-2.78	0.005	-1.206347	-.2082877
FDI						
LD.	-.0883891	.0804082	-1.10	0.272	-.2459863	.0692081
HC						
LD.	.1807667	.1807057	1.00	0.317	-.1734101	.5349434
BD						
LD.	.0012172	.0026661	0.46	0.648	-.0040082	.0064426
MANU						
LD.	-.0270743	.8546979	-0.03	0.975	-1.702251	1.648103
_cons	2.825531	.9708881	2.91	0.004	.9226256	4.728437

According to the results, as shown in Table.9, there was a negative relationship between trade deficits, investment, FDI, and economic growth in the short run. All are non-significant relationship, except for investment. However, there is a non-significant positive relationship between human capital, budget deficits, manufacturing, and economic growth in the short run.

4.5 Diagnostic tests

The aim of these tests is to check whether there is autocorrelation, normality issues and heteroscedasticity or not in this time series data. For these tests, the level of significance is 0.05%.

Table.10 (a) *Diagnostic test*

Durbin's alternative test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	1.442	1	0.2299

H0: no serial correlation

Breusch-Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	1.904	1	0.1676

H0: no serial correlation

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	50.2336	49	0.42432
2	47.2230	49	0.54543

H0: no autocorrelation at lag order

The results, which are reflected in Table.10 (a), showed that there was no serial correlation among the variables because p value was greater than 0.05. That means that null hypothesis must be cannot be rejected and alternative hypothesis must be rejected. Therefore, the model used in this paper was good.

Table.10(b) *Diagnostic test*

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of GDPPC

         chi2(1)      =     7.03
         Prob > chi2  =   0.0080
```

As for the Breusch-Pagan test, the results showed that there is no constant variance among the variables because p value is smaller than 0.05.

Table.10 (c) *Diagnostic test*

Jarque-Bera test

Equation	chi2	df	Prob > chi2
D_GDPPC	0.307	2	0.85789
D_TD	0.629	2	0.73022
D_INV	2.076	2	0.35425
D_FDI	1.741	2	0.41872
D_HC	5.422	2	0.06646
D_BD	0.493	2	0.78145
D_MANU	0.258	2	0.87906
ALL	10.925	14	0.69190

Skewness test

Equation	Skewness	chi2	df	Prob > chi2
D_GDPPC	-.00304	0.000	1	0.99505
D_TD	.00951	0.000	1	0.98452
D_INV	.69327	2.003	1	0.15703
D_FDI	.64444	1.730	1	0.18836
D_HC	.80416	2.694	1	0.10070
D_BD	.33403	0.465	1	0.49534
D_MANU	.24866	0.258	1	0.61175
ALL		7.150	7	0.41339

Kurtosis test

Equation	Kurtosis	chi2	df	Prob > chi2
D_GDPPC	2.4576	0.307	1	0.57983
D_TD	2.2233	0.628	1	0.42793
D_INV	3.2646	0.073	1	0.78715
D_FDI	2.8988	0.011	1	0.91771
D_HC	4.6182	2.728	1	0.09861
D_BD	3.1648	0.028	1	0.86640
D_MANU	2.9868	0.000	1	0.98924
ALL		3.775	7	0.80532

Table.10(c) shows the data has normal distribution; therefore the model in this study is good.

4.6 Granger Causality Test

Table.11 *Granger Causality Wald Tests*

Equation	Excluded	chi2	df	Prob > chi2
GDPPC	TD	.52467	2	0.769
GDPPC	INV	9.056	2	0.011
GDPPC	FDI	2.584	2	0.275
GDPPC	HC	9.7331	2	0.008
GDPPC	BD	.16273	2	0.922
GDPPC	MANU	.67752	2	0.713
GDPPC	ALL	35.948	12	0.000
TD	GDPPC	2.667	2	0.264
TD	INV	3.4002	2	0.183
TD	FDI	.09284	2	0.955
TD	HC	3.1153	2	0.211
TD	BD	.32862	2	0.848
TD	MANU	2.811	2	0.245
TD	ALL	30.826	12	0.002
INV	GDPPC	12.592	2	0.002
INV	TD	65.043	2	0.000
INV	FDI	18.326	2	0.000
INV	HC	30.074	2	0.000
INV	BD	7.0767	2	0.029
INV	MANU	85.317	2	0.000
INV	ALL	236.86	12	0.000
FDI	GDPPC	7.2951	2	0.026
FDI	TD	4.5414	2	0.103
FDI	INV	6.102	2	0.047
FDI	HC	3.3728	2	0.185
FDI	BD	5.2202	2	0.074
FDI	MANU	6.3325	2	0.042
FDI	ALL	20.428	12	0.059
HC	GDPPC	.8377	2	0.658
HC	TD	8.3936	2	0.015
HC	INV	3.4646	2	0.177
HC	FDI	1.2383	2	0.538
HC	BD	4.3518	2	0.114
HC	MANU	.81783	2	0.664
HC	ALL	25.22	12	0.014
BD	GDPPC	3.149	2	0.207
BD	TD	2.6081	2	0.271
BD	INV	31.085	2	0.000
BD	FDI	1.5525	2	0.460
BD	HC	7.5788	2	0.023
BD	MANU	7.5637	2	0.023
BD	ALL	89.417	12	0.000
MANU	GDPPC	.09253	2	0.955
MANU	TD	.28244	2	0.868
MANU	INV	3.0574	2	0.217
MANU	FDI	2.5134	2	0.285
MANU	HC	4.7282	2	0.094
MANU	BD	.49691	2	0.780
MANU	ALL	44.589	12	0.000

According to the results of the Granger Causality Test, trade deficits, FDI, budget deficits, and manufacturing sector are not good predictors of real growth of GDP per capita, while investment and gross secondary school enrollment rate are good predictors of real growth of GDP per capita, individually. On the other hand, the results for all tests shows that trade deficits and other control variables can be considered good predictors of real growth of GDP per capita because p-value is at 1% level of significance. These results, particularly from individual tests, show co-integration of real growth of GDP per capita, trade deficits and control variables. This suggests that these variables maintained a stable long-term relationship throughout the period of analysis, but lack sufficient evidence to show Granger-causality going from trade deficits and control variables to real growth of GDP per capita.

CHAPTER 5

SUMMARY OF THE FINDINGS, POLICY IMPLICATIONS, AND CONCLUSION

5.1 Summary of the Findings

This paper attempts to find the relationship between trade deficits and economic growth in Myanmar over a period of 27 years (1989 to 2015). In this study, economic growth was considered as the dependent variable, while trade deficit share in GDP, investment share in GDP, FDI share in GDP, gross secondary school enrollment rate, fiscal deficit share in GDP, and manufacturing share in GDP were the independent variables. All variables are stationary at a 1% level of significance. Although OLS is an appropriate technique in this situation, the results obtained from ordinary least squares are spurious (i.e. R-squared > Durbin Watson). Therefore, Johansen co-integration and error correction model were used for long and short run analysis, respectively.

The results of Johansen co-integration show that there is a negative relationship between trade deficits, investment, foreign direct investment, secondary school enrollment rate, and economic growth in the long run. All are significant relationships, except for foreign direct investment. There is a significant positive relationship between budget deficits, manufacturing, and economic growth in the long run. On the other hand, the results of the vector error correction model show that there is a negative relationship between trade deficits, investment, foreign direct investment, and economic growth in the short run. All are non-significant relationships, except for investment. However, there is a non-significant positive relationship between secondary school enrollment rate, budget deficits, manufacturing, and economic growth in the short run.

5.2 Policy Implications

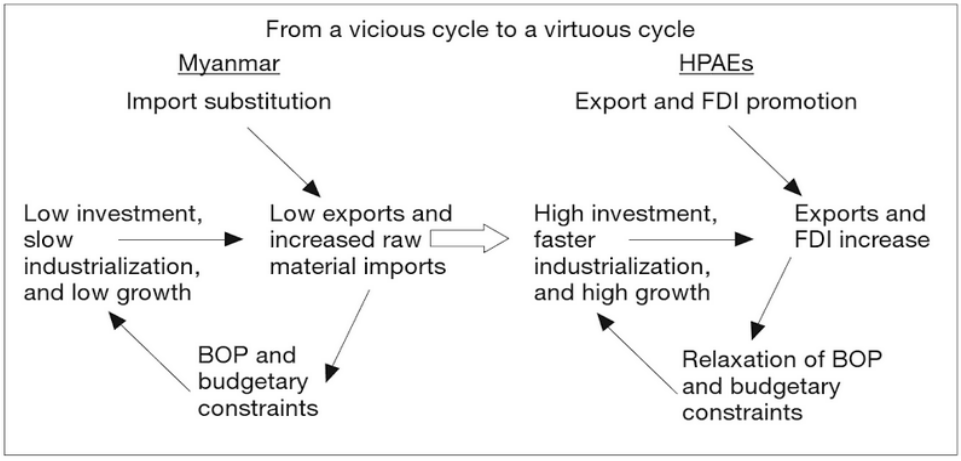
Based on the findings of this study, there are several strategies which I would recommend the Myanmar government implement to reduce trade deficits which have negatively impacted the economy. These strategies include:

1. The Myanmar government should carefully evaluate and monitor the importation of consumer goods. For example, whether domestic firms are able to produce sufficiently or not; or whether local products are maintained within reasonable prices compared with imports.
2. Using the factor endowments in Myanmar, the government should ascertain the ways to produce the diversified value-added exports, instead of exporting the primary goods, and specialize in products for which it has a comparative advantage.
3. For long term sustainable economic growth, the government should encourage human resources development programs to acquire the advanced technological knowledge being introduced through FDI.
4. Having a low level of domestic savings and investment, the Myanmar government should pay intention to stability in politics—the major elements to attract FDI.
5. To draw out underdevelopment and turn into an industrialized nation, Myanmar should learn from the experience of Hong Kong, Singapore, South Korea, and Taiwan.
6. As proposed by Khin Maung Kyi et al. (2000), Myanmar should establish institutions which encourage trade and investment with the outside world because the current stream of commercial information from the external world to potential Myanmar producers is fragile. In addition, Myanmar should encourage export trade at the initial stage because presently, Myanmar does not have any sufficient foreign exchange to pay for great amounts of imports to. Eventually, import substitution

may catch on and Myanmar may be able to contend in an international context if it has enough human capital and capital equipment.

7. As suggested by Myat Thein (2004), instead of import substituting industrialization (ISI) strategy, Myanmar should go through the export-oriented industrialization strategy and the advancement of foreign direct investment (FDI) to enjoy a virtuous cycle of exports and FDI increase, lessening of BOP and budgetary constraints, higher investment, faster industrialization, and higher development, as shown in Figure.9.

Figure.9 *Different Practice of Myanmar and the HPAEs*



Source: Courtesy of Seiichi Masuyama as cited in Myat Thein (2004)

8. As advised by U Myint (2009), Myanmar should also consider adopting fractional import substitution strategies to protect domestic production for some import goods. However, Myanmar needs to care conventional import substitution policy that applied high tariff rate and other non-tariff barriers. Apart from developing and exporting labor-intensive and resource-based merchandise, there are good prospects for Myanmar to promote industrialization through import replacement.

5.3 Conclusion

Considering the question of whether trade deficits are good or bad, depends on the type of country and specific goals of that nation. Some nations can run trade deficits

because they have a strong skilled labor force and a high GDP per capita, meaning that consumers can pay off debt from consumption. For some states, having a trade deficit is not safe because this would mean that they import everything from food to currency. Thus, the trade deficit is not beneficial to economic growth, but rather, social stability, which is necessary for some nations to exist during difficult economic times.

According to this subject area, the trade deficit is not safe for the long run and short run economic growth of Myanmar. In this context, there are many factors which have created a high trade deficit. These include: such as importing more consumer goods rather than capital goods and raw material that are needed for domestic production, relying on primary exports with unstable prices for earning higher foreign currency, and having abundant unskilled labor that can only produce substandard products, low level of human capital that cannot use advanced technical equipment, low level of manufacturing exports share in GDP, high consumption rate, low domestic saving and investment rate, and low level of per capita GDP.

Nevertheless, reducing the trade deficit is very challenging because protectionist foreign trade strategies may reduce economic welfare instead of its intended target, the trade deficit. In this context, macroeconomic policy is the best way to reduce the trade deficit by impacting the saving-investment balance, but it has still unclear how to increase domestic saving instead of minimizing domestic investment (Elwell, 2007).

In summary, it is impossible for every country to always have trade surplus, due to different factors (e.g. endowements, technological changes, consumer preferences). A trade deficit is not always harmful, as there is no guarantee that a trade surplus will result in a robust economic health. At present, there is still no definite relationship between trade deficits and economic growth. In this study, the results are similar with the previous

empirical findings. In the short run trade deficits may be beneficial to an economy while in the long run they may potentially cause harm.

APPENDIX

Table.1 *The Trade Balance by BSITC (US$ Million), 1985-2014*

	By Commodity Section	1985	1990	1995	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 (p.a)	2011	2012	2013	2014 (p.a)
1	Food	128.7	19.5	69.0	256.6	62.0	430.5	470.5	435.8	408.3	487.8	796.0	957.9	1157.4	1353.5	1108.3	1572.2	1206.5	644.5	401.4
2	Beverages and tobacco	-0.3	0.0	-2.3	-10.5	-2.0	-11.2	-6.8	3.4	7.4	25.1	27.2	22.6	18.6	9.5	-6.8	-21.6	-30.0	-59.6	-63.2
3	Crude materials, inedible except fuel	140.8	31.7	45.7	237.9	27.3	359.7	306.4	381.3	413.6	518.4	547.0	717.5	467.0	611.3	804.7	184.8	452.5	1060.1	487.5
4	Mineral fuels, lubricants and related materials	-9.9	-5.9	-5.8	-257.5	0.8	60.9	577.9	250.1	788.5	853.0	1381.5	2209.4	1799.6	2246.5	1062.3	1485.1	2038.6	1171.3	1263.3
5	Animal and vegetable oils and fats	-9.1	-11.1	-37.3	-77.5	-9.8	-37.8	-41.2	-73.0	-80.8	-78.0	-82.9	-205.5	-296.8	-179.1	-201.0	-392.2	-307.5	-543.2	-557.4
6	Chemicals	-53.7	-7.7	-62.2	-296.7	-45.5	-265.0	-266.0	-231.2	-191.4	-219.2	-313.5	-366.8	-378.5	-413.7	-554.9	-692.1	-671.4	-960.1	-1134.6
7	Manufactured goods chiefly by materials	-128.2	-12.0	-39.6	-559.2	-74.9	-611.9	-488.9	-423.5	-234.5	-147.0	-51.6	3.7	-60.0	164.7	886.2	-1027.7	-1602.2	-2473.3	-2336.6
8	Machinery and transport equipment	-288.5	-52.2	-92.1	-728.3	-88.3	-760.0	-537.2	-561.2	-521.6	-412.3	-592.3	-905.0	-1496.6	-1072.9	-1540.0	-2281.8	-2586.2	-4142.2	-4746.0
9	Miscellaneous manufactured articles	-46.0	-4.8	2.4	-74.2	13.5	-92.8	-71.1	-49.9	-37.2	-27.6	-39.4	-62.6	-79.5	-75.8	-137.6	-200.2	-221.0	-452.5	-1129.3
10	Miscellaneous transactions and commodities	3.2	-23.1	-42.2	-93.8	-2.9	138.5	260.4	-24.8	43.0	67.8	180.5	123.7	-94.2	-58.8	36.3	604.7	747.3	405.4	1511.6
	GRAND TOTAL	**-263.1**	**-65.6**	**-164.4**	**-1603.2**	**-119.6**	**-789.1**	**203.9**	**-293.0**	**595.3**	**1068.2**	**1852.5**	**2495.0**	**1037.1**	**2585.3**	**1457.6**	**-768.9**	**-973.4**	**-5349.5**	**-6303.3**

Source: Myanmar Central Statistical Office, the Ministry of Planning and Finance

Table.2 *The Manufacturing Share in Total Exports by Sector (1985-2014)*

Manufacturing Items	1985	1990	1995	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 (p.a)	2011	2012	2013	2014
Chemicals	27.3	1.4	0.4	1.3	0.4	11.0	4.3	1.9	0.5	0.4	0.8	0.8	0.5	0.5	0.5	1.3	1.3	11.8	2.8
Manufactured goods chiefly by materials	103.9	33.1	61.5	602.1	190.9	448.5	863.6	836.5	228.3	365.9	521.3	653.1	694.3	988.3	2082.6	667.6	26.7	23.9	497.8
Machinery and transport equipment	-	-	8.7	279.6	4.3	18.1	12.1	11.5	2.2	2.4	2.1	1.5	0.2	0.7	0.1	0.1	1.0	32.0	1.6
Miscellaneous manufactured articles	11.4	2.7	57.9	175.6	241.8	103.8	87.8	104.9	18.6	19.8	14.7	12.5	8.7	6.5	9.3	4.2	6.6	39.5	25.3
Total Manufacturing Goods Value	142.6	37.2	128.4	1058.5	437.4	581.5	967.8	954.8	249.5	388.5	538.8	667.8	703.7	996.0	2092.5	673.2	35.6	107.2	527.5
Total Export	2566.1	475.0	895.0	6164.9	1541.7	13090.6	16255.9	11610.0	2568.6	3052.6	4789.3	5848.4	5580.4	6766.7	7870.4	8266.2	8095.5	9014.3	10329.8
Manufacturing exports in total trade (%)	5.6	7.8	14.3	17.2	28.4	4.4	6.0	8.2	9.7	12.7	11.3	11.4	12.6	14.7	26.6	8.1	0.4	1.2	5.1

Source: Author's calculation based on the data from Myanmar Central Statistical Office

Figure.3 *Relationship Between Trade Deficits and Economic Growth*

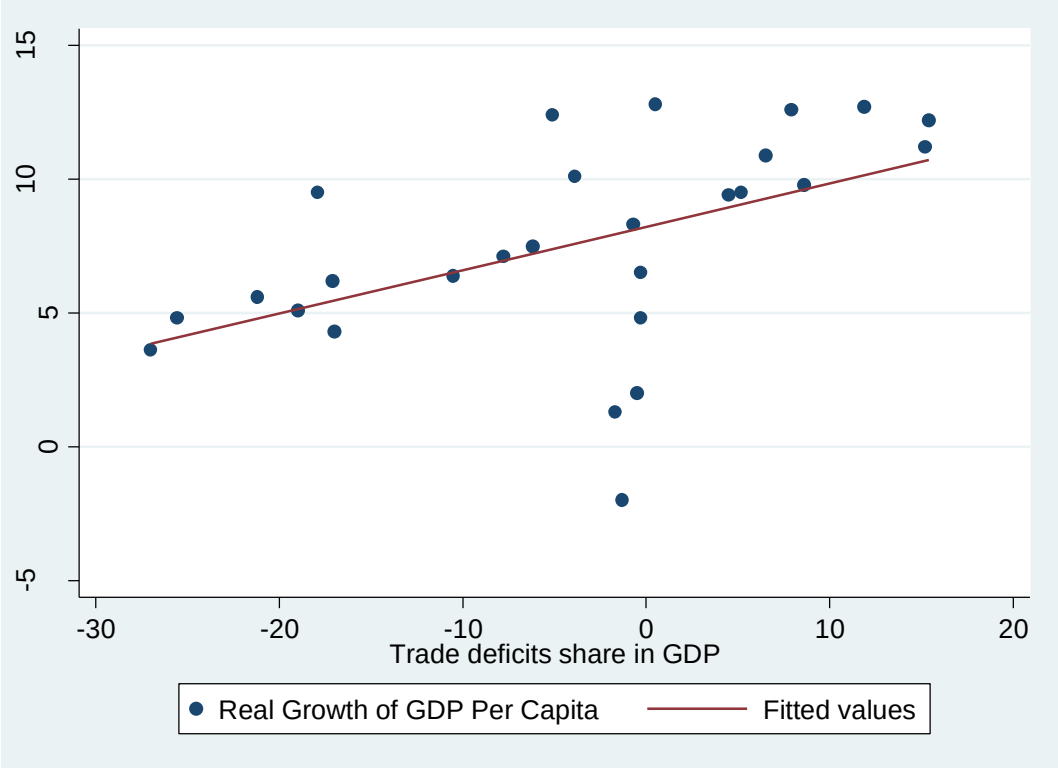


Figure.4 *Relationship Between Investment and Economic Growth*

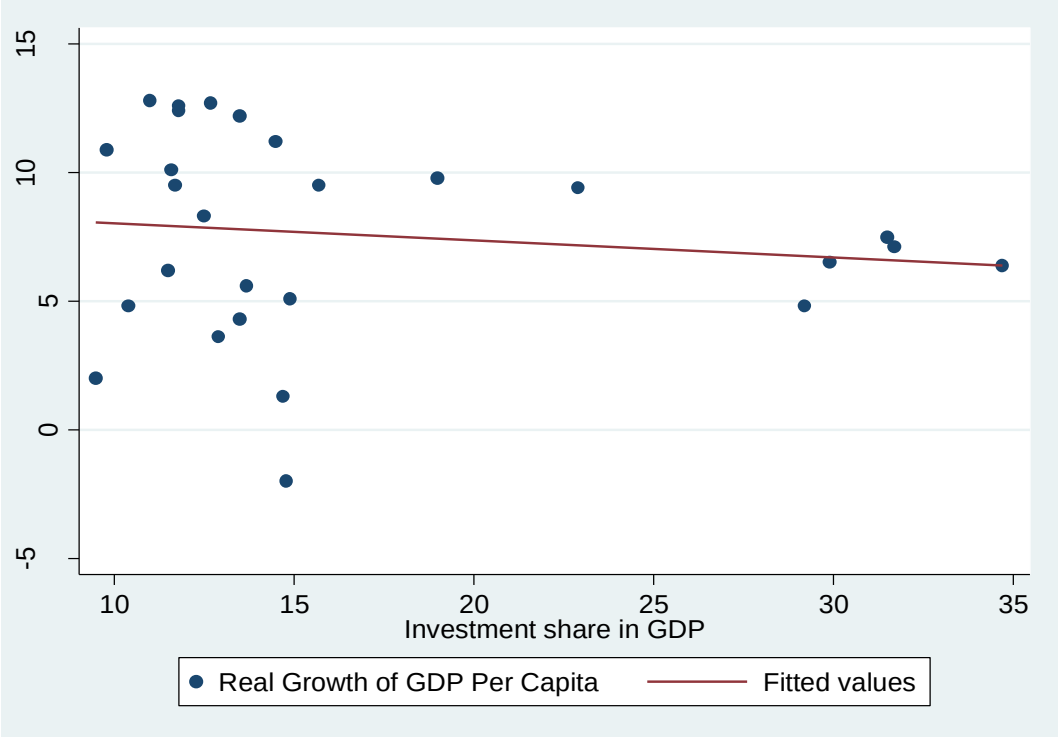


Figure.5 *Relationship Between FDI and Economic Growth*

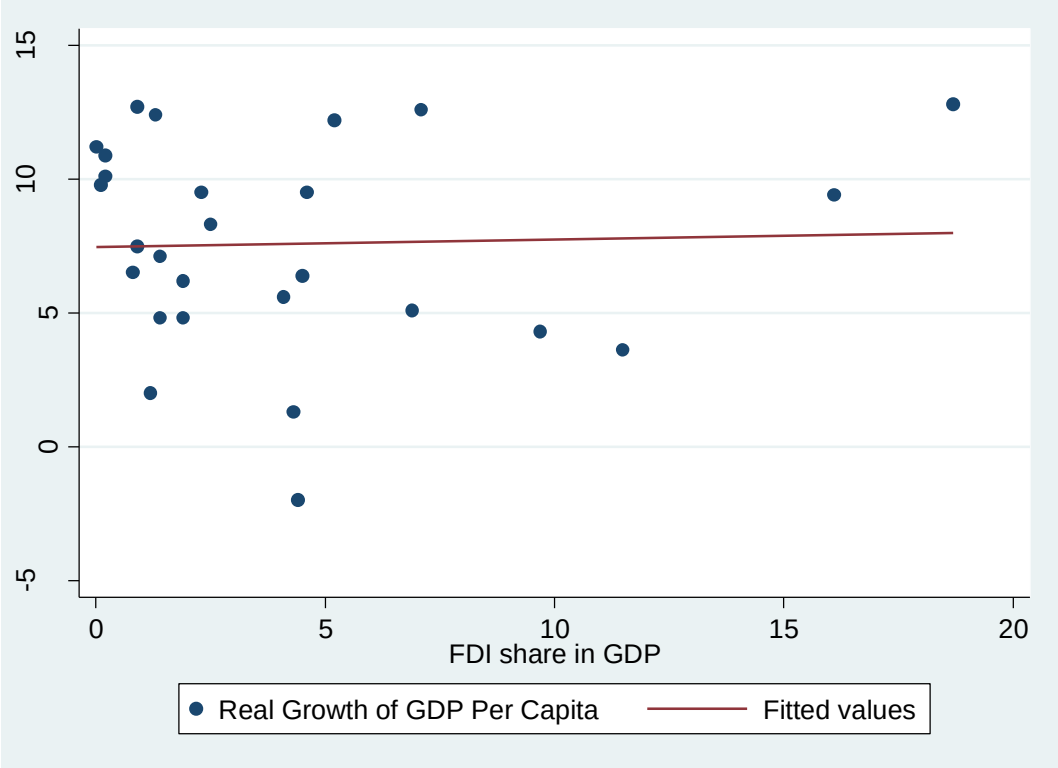


Figure.6 *Relationship Between human capital and Economic Growth*

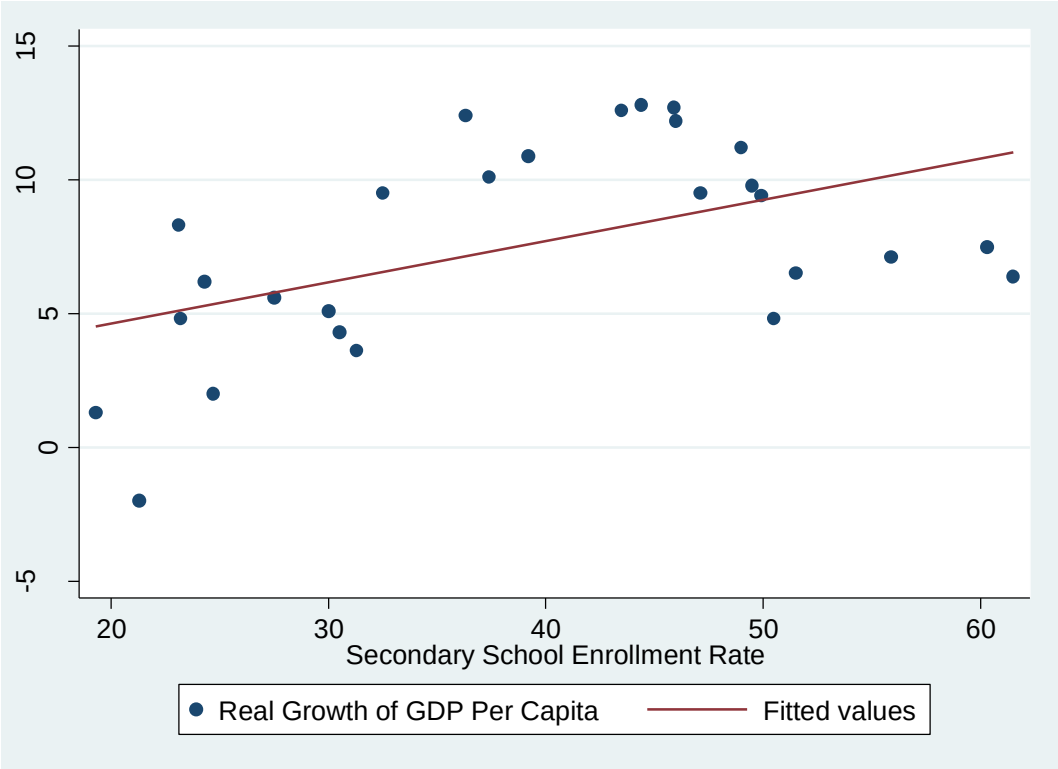


Figure.7 *Relationship Between Budget Deficits and Economic Growth*

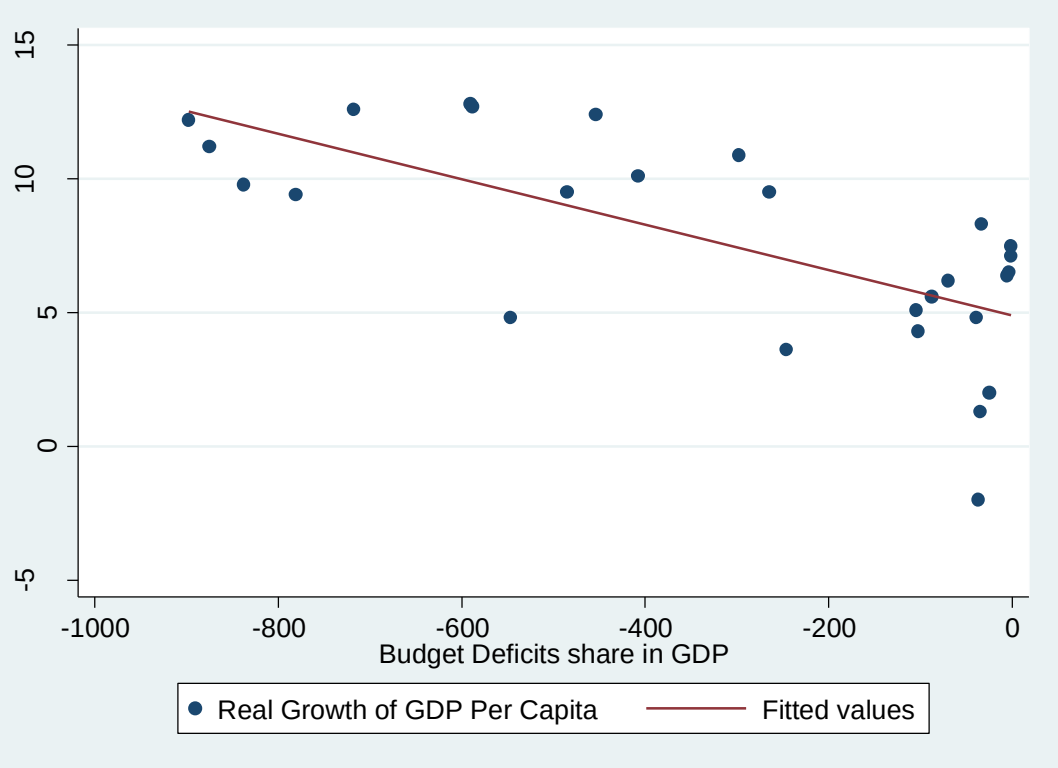
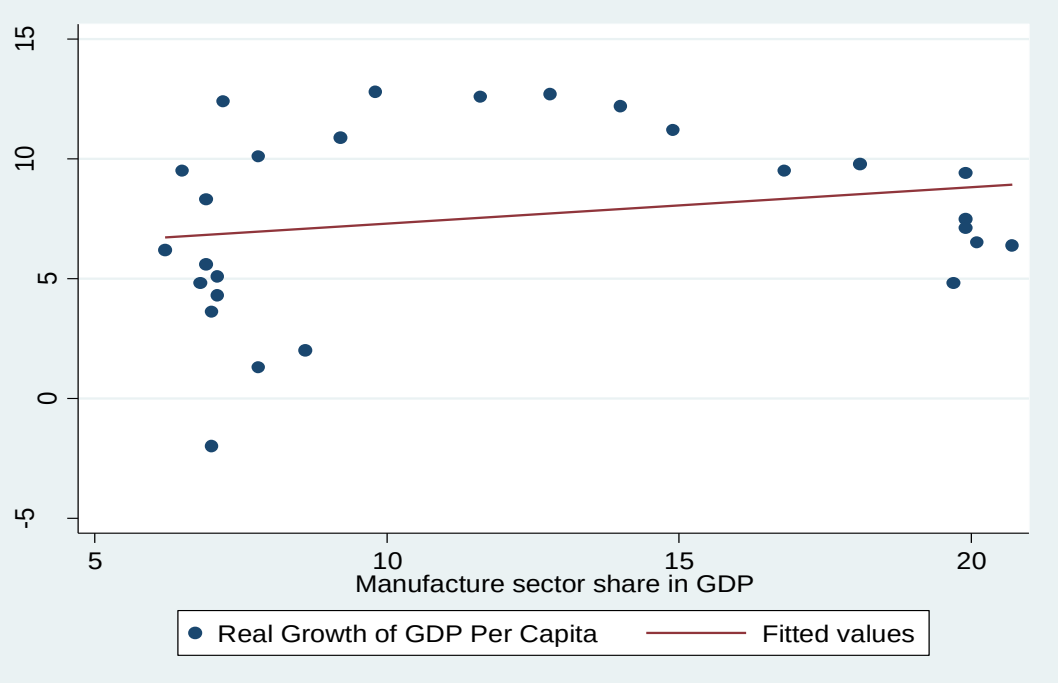


Figure.8 *Relationship Between Manufacture Sector and Economic Growth*



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